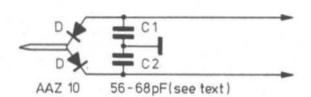


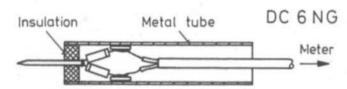
Dr. Siegfried Behrens, DC 6 NG

## An RF-Probe for Test and Measurement Purposes

It is sufficient to use a simple RF-probe together with a subsequent DC-meter to establish whether an active four-pole is oscillating or not. The application range is from VLF up to UHF. If the voltmeter has a high impedance, it is possible to indicate unmodulated RF-voltages quite accurately. One great advantage is that no ground connection is required, since the hand capacity of the user is sufficient for grounding. The concept is based on the circuit given in (1). Further information regarding the use of semi-conductors for rectification and as a meter amplifier were found in (2). However, a meter amplifier will not be necessary as long as the DC-meter has an impedance of more than 50  $k\Omega/V$ .

The simple circuit is shown in **Figure 1**. The current circuit is completed by the input impedance of the meter, which is not shown.







Germanium diodes are used to rectify the RFvoltage. These are types used for low-impedance rectifier circuits. The following types are especially suitable:

AAZ 10 (Telefunken) AAY 27, AA 116 (Siemens) OA 90 (Philips) 1 N 40

These are older diode types, and one will probably find the AA 116 easiest. If a few 1 N 21 diodes are found in the drawer, then the probe can be built-up with these.

Capacitors C 1 and C 2 should preferably be chip capacitors of maximum 100 pF. This value may seem too low, but it will guarantee that the capacitors still operate as capacitors at UHF, which would no longer be the case with capacitance values in excess of 1 nF.

A suitable construction is shown in Figure 2. The operation at higher frequencies depends on a careful, and stable construction and in-

stallation of the probe tip, and by maintaining the shortest connections to the diodes, and from these to the disc capacitors. All other parts are uncritical. Do not forget to use some means of fixing the cable in the probe so that the connections are not broken on pulling.

The author was able to measure RF-voltages of between 30 kHz and 430 MHz with an error of only 10 %, even though construction was not perfect. Unfortunately, defined voltages of higher frequencies were not available, and it was not possible to determine the upper frequency limit.

## REFERENCES

- (1) Information on the Siemens HF-Multizet
- (2) Information on the Resonance Frequency Meter WAM (Rohde u. Schwarz)

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